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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/048,104	06/17/2002	Hans-Rolf Dubal	514453-3912	1522

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EXAMINER

WANG, GEORGE Y

ART UNIT	PAPER NUMBER
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2871

DATE MAILED: 01/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/048,104

Applicant(s)

DUBAL ET AL.

Examiner

George Y. Wang

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 June 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 29, 2004 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asao et al. (U.S. Patent No. 6,577,289, from hereinafter "Asao") in view of Taniguchi et al. (U.S. Patent No. 4,941,736, hereinafter "Taniguchi").

4. As to claim 12, Asao discloses a liquid crystal switching display device (title) comprising a chiral smectic liquid crystal mixture (col. 7, line 51) in monostable alignment (col. 12, line 20).

However, the reference fails to specifically disclose an LC mixture that is characterized in that the ratio of the angle between the rubbing direction and the smectic layer normal to the tilt angle in the LC mixture is at least 0.41.

Taniguchi discloses a liquid crystal display device comprising an LC mixture that is characterized in that the ratio of the angle between the rubbing direction and the smectic layer normal to the tilt angle in the LC mixture is at least 0.41 (col. 7, lines 26-32).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a chiral smectic liquid crystal mixture that is characterized in that the ratio of the angle between the rubbing direction and the smectic layer normal to the tilt angle in the LC mixture is at least 0.41 since one would be motivated to optimize switching for the LC molecules to have the average molecular axes memorized

after the removal of the electric field (col. 7, lines 35-55). Ultimately, this serves to improve display contrast and a more efficient driving mechanism for better viewing (col. 2, lines 11-41).

5. Regarding claims 13-15, Asao discloses the liquid crystal switching display device as recited above that is an active matrix display (col. 5, line 2) having a tilt angle at 25 °C is between 19° and 39° and a spontaneous polarization of less than 150 nC/cm² (col. 10, lines 39-46).

6. Claims 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asao and Taniguchi, in further view of Fuss et al. (U.S. Patent No. 5,547,605, from hereinafter "Fuss").

Asao, when modified by Taniguchi, discloses the liquid crystal display device as recited above, however, the references fail to specifically disclose the pitch of the cholesteric helix greater than 2 μm and sulfur-containing heterocyclic compounds, which derive from thiophene and are at least 20% by weight.

Fuss discloses a liquid crystal mixture for I-N-C phase sequence (col. 1, line 35) having where pitch of the cholesteric helix greater than 2 μm (col. 1, lines 37-38) and containing sulfur-containing heterocyclic compounds (col. 2, line 55 – col. 4, line 10), which derive from thiophene (abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have included the aforementioned specifics since one would be

motivated to achieve optimum contrast and alignment (col. 1, lines 28-33). The introduction of thermal, chemical, and photochemical stability allows quick and shortened response time (col. 2, lines 7-15), useful in wide viewing angles and reliable switching (col. 1, lines 5-19).

Response to Arguments

7. Applicant's arguments with respect to claims 12-18 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's arguments with respect to the Mori and Takatori reference no longer apply because of the new grounds of rejection based on Asao and Taniguchi. With regard to the Fuss reference, Applicant's only argument is that the reference does not remedy the deficiencies of Mori and Takatori. In the current rejection, Fuss is more than sufficient in providing the specifics of the liquid crystal mixture for I-N-C phase sequence in combination with the Asao and Taniguchi references. Therefore, the Examiner maintains rejection.

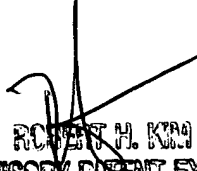
Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to George Y. Wang whose telephone number is 571-272-2304. The examiner can normally be reached on M-F, 8 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on 571-272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

gw
January 10, 2005


ROBERT H. KIM
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2000